DIGITAL WARMING CABINETS

INSTALLATION-OPERATION-MAINTENANCE

USER MANUAL

California OSHPD
Pre-approved

Mac Medical
820 S Mulberry St.
Millstadt, IL 62260
(618) 476-3550 phone
(618) 476-3337 fax

December 2007

Contents

1. Warnings and Cautions

2. Installation

2-3. Operation / Troubleshooting

4. Fan Replacenent (upper)

5. Fan Replacement (lower)

6. Door Hinge Reversal

7. Replacement Parts List

8-12. Wiring Diagrams

13. Error Codes

Warnings and Cautions

The following is a list of safety precautions that must be observed when operating this equipment.

Warning: Injury hazard

REPAIRS AND AJUSTMENTS should be attempted only by experienced service representatives. Use of unqualified persons to work on this equipment could result in personal injury or costly damage.

Warning: Burn Hazard

Do Not exceed 150 F for non-vented closures; (screw caps, crimp seals, plastic pouches, etc.) Do not exceed pre-sterile solution manufacturer's temperature requirements.

Do Not raise set temperature to increase rate of heating. Allow approximately 4-6 hours for solutions to reach desired temperatures.

Do Not use liquids on or inject in living tissue unless actual liquid temperature has been measured and is acceptable. Temperature of warming cabinet's contents may be hotter than the displayed air temperature. For patient safety, in accordance with good medical practice, always check liquid temperature prior to using.

Warning: Electric Shock Hazard.

Do Not remove control tray. Contact a qualified service representative.

Warning: Explosion Hazard.

Do Not use in the presence of flammable anesthetics. Do not heat liquids in the presence of flammable solvents.

Caution: Possible Equipment Damage. Some items are not acceptable in these warming cabinets. If in doubt as to whether an item can be safely processed, have facility supervisor contact the manufacturer of the item.

Routine Preventative Maintenance

- Check the temperature accuracy on a semi-annual basis by placing a thermometer near the fan inlet.
- Air temperature should be within 1 degree F for upper chamber and counter top units, and +/- 3 degrees F for lower compartment and large single cabinet units.
- If the cabinet is not within these guidelines contact Mac Medical for further assistance. **1-877-828-9975**

Location for use

This unit is intended for use in a stable ambient environment, with an ideal temperature of 72 degrees F or less. The unit should never be used directly next to any appliance that may produce heat, such as an autoclave. If the unit location is near an autoclave or similar appliance, modifications may be made to ensure proper operation. Contact Mac Medical for information.

Recommended Settings

Mac Medical does not recommend chamber set points. For appropriate heating temperatures, please contact the manufacturer of the goods being heated. For more information please contact Mac Medical.

Warning

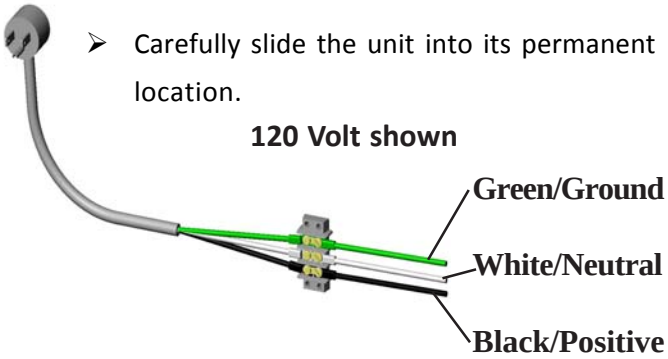
Please review all safety precautions before operating Mac Medical equipment.

Installation

- Carefully un-wrap packaged parts.
- Place cabinet in front of its permanent location.
- Plug the unit into the correct electrical supply… 120 VAC, 15 amp max or 220 VAC, 7 amp max.
- Carefully slide the unit into its permanent location.

Installation for units to be wired directly to supply

- Remove screws and top cover. (see page 4)
- Remove protection plate under top cover.
- Feed electrical supply into cabinet through rear of cabinet.
- Connect electrical supply as shown below.
- Reinstall cover and top.
- Carefully slide the unit into its permanent location.

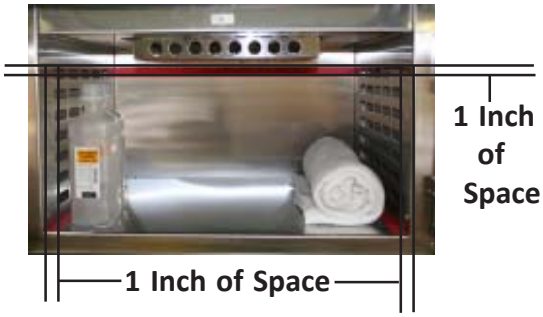


Operation

This cabinet has been designed to heat:

- Liquids in vented containers.
- Liquids in non-vented containers to a temperature of 150 F maximum.
- Metal objects.
- Muslin or cotton sheets and wool blankets.
- Glass containers must be annealed borosilicate glass (Pyrex type).
- Plastic containers must be rated *Thermal* capable of withstanding temperatures in excess of 300 F.

Note:



- Load contents into compartment with a **minimum of 1 Inch** of space between walls and fan to allow for circulation (as seen above).

Load

- Open the heating compartment door(s) and place the articles to be heated in the chamber, then close the door(s).

Start

- Apply power to the system by pressing the power switch to the ON position. (Each chamber has its own power switch).

Operation

Set processing temperature

- Press SET and release.
- Press one of the arrow keys either up or down to reach desired set point.
- Press SET again to complete the change. (If dual chamber, steps must be completed for both chambers).

Note:

The temperature setting may be changed at any time, however, reducing the temperature could activate the over temp alarm.

If alarm is activated and the control panel reads HI complete the following steps.

- Press ALARM RESET to silence alarm.
- Open door(s) to release heated air.
- If the display reads HI and alarm remains, open door(s) and allow more cooling time.

Note:

If the alarm is activated under normal operating conditions, turn power to specific chamber off and call your Mac Medical representative at **1-877-828-9975.**

Troubleshooting

The Unit will not heat

- Check that the doors are closed.
- Check that the power is on.
- Check that the building power is activated.
- Open doors and hold down door switch. If no noise is heard from fan operation contact Mac Medical.

The unit heats, but does not reach the selected temperature.

- Allow enough operating time for the unit to reach the set point.
- Open doors and hold down door switch. If no noise is heard from fan operation contact Mac Medical.

Audible alarm and HI message alert

- The alarm is activated when actual temperature exceeds the set point by ten degrees.

Audible alarm and HI message alert (Upper Chamber Only)

- Possible heat transfer from lower unit.
- The temperature of the lower unit can be no more than 30 degrees F greater than the temperature of the upper unit.
- This problem can be prevented by lowering the temperature of the lower unit or by reversing the contents of the two compartments.

Fan Replacement (upper Drawer)

1. Turn off power switch and disconnect power to the unit.

2. Remove top cover from unit. (The top cover has two separate layers to remove). (6 Screws)

3. Disconnect the black and white wires connected to the fan motor.

4. From inside the heating chamber, remove the outer fan guard. (4 Screws)

5. Remove the inner fan guard. (2 Screws)

6. Remove the nut from the fan's drive shaft and remove the fan impellor. **(The nut has left-hand threads)**.

7. From underneath drawer, remove motor mounting screws, and remove motor. (3 Screws) **(The E clip on the motor shaft may snag. If so, tilt the shaft at an angle and feed it through the drawer base).**

8. Install new motor.

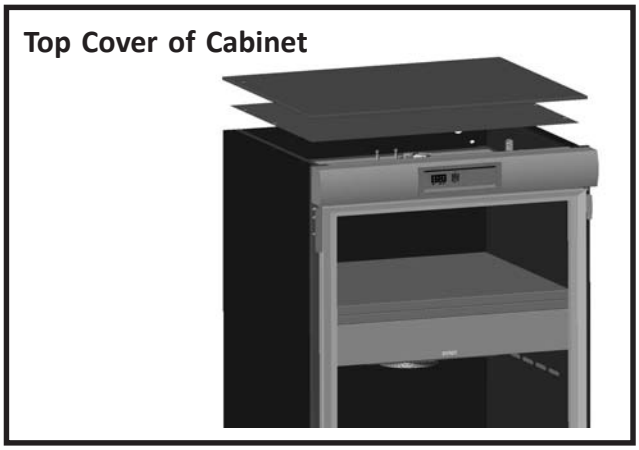
9. Be sure the terminals on the motor face the rear of the cabinet.

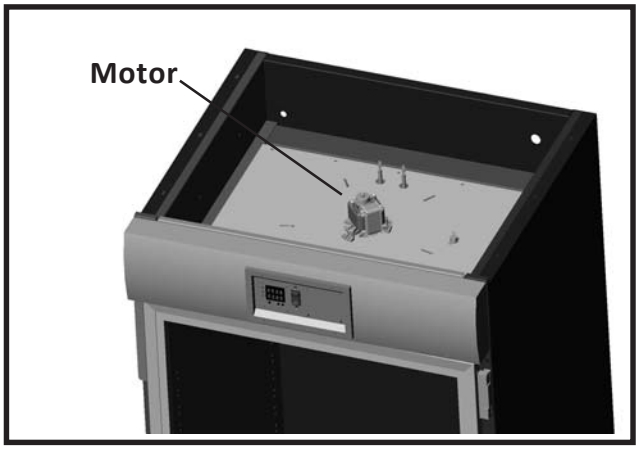
10. Install the three mounting screws in the new motor attach the black and white wires.

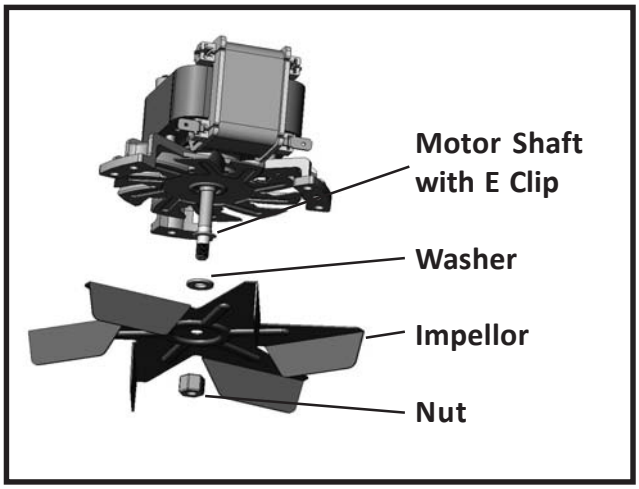
DO NOT connect the (RED) element wire to the motor. This could cause serious mechanical damage.

11. Install the **NEW** washer, fan impellor, and nut. **DO NOT** over tighten nut.

12. Reassemble the fan guards and replace the top of the cabinet.







Fan Replacement (Lower Drawer)

1. Turn off power switch and disconnect power to the unit.

2. Open lower door and remove the drawer screws from underneath drawer. (2 screws)

3.Carefully pull the drawer 3/4 of the way out, or until motor is accessable.

4. Disconnect the black and the white wires connected to the fan motor.

5. From inside the unit, remove the outer fan guard. (4 Screws)

6. Remove the inner fan guard. (2 Screws)

7. Remove the nut from the fan's drive shaft and remove the fan impellor. **(The nut has left-hand threads)**.

8. From underneath drawer, remove motor mounting screws, and remove motor. (3 Screws)

9. Install new motor. **(The E clip on the shaft may snag. If so, tilt the shaft at an angle and feed it through the drawer base).**

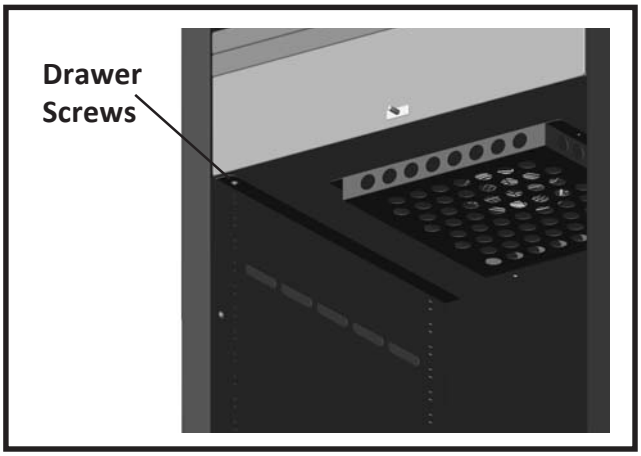
10. Be sure the terminals on the motor face the rear of the cabinet.

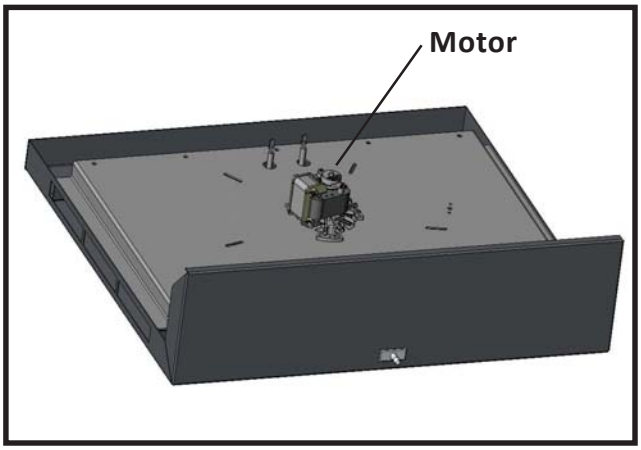
11. Install the three screws in the new motor attach the two wires. (See previous page).

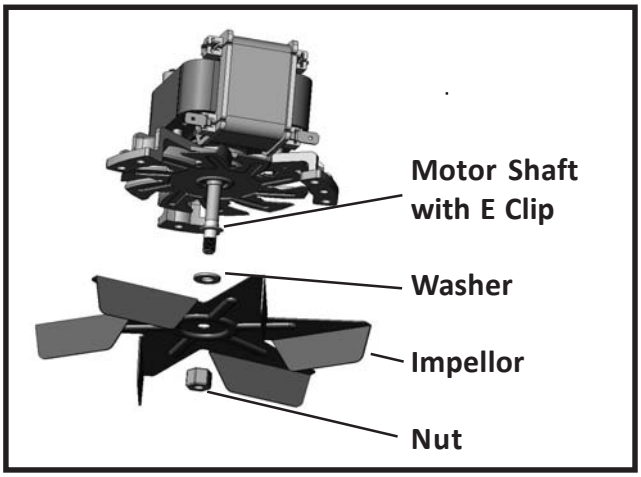
12. Install the **NEW** washer, fan impellor, and nut. **DO NOT** over tighten nut.

13. Check to ensure that no other connections have been disturbed before pushing in drawer.

14. Replace drawer and drawer scerws.







Door Hinge Reversal

1. Turn off power switch and disconnect power to the unit.

2. Remove top cover from unit. (The top cover has two separate layers to remove). (6 Screws)

3. Open the cabinet door and remove the screws from the side panels inside the cabinet. (4 Screws)

4. Remove all screws from the outer edge of the rear of the cabinet. These are the screws that secure the side panels of the unit. (Number of screws varies according to cabinet size).

5. Carefully slide each side panel toward the rear of the cabinet 2-3 inches and then remove the entire panel.

6. Tap out the door hinge pins (glass door only).

7. Remove the nuts from the rear of the hinge mount and remove the hinges.

8. Remove the hole plugs from the front of the opposing side of the unit.

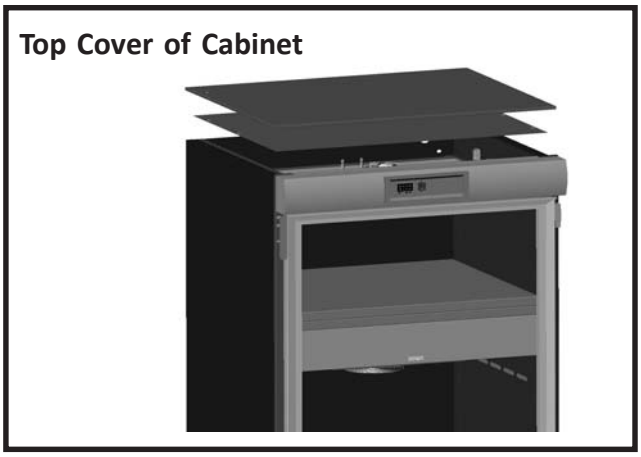
9. Mount the hinges on the opposing side leaving them hand tight.

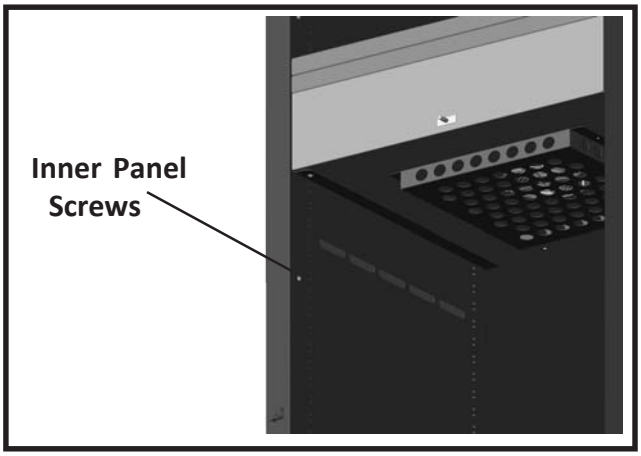
10. Reinstall the door, align, and tighten the hinge mounts.

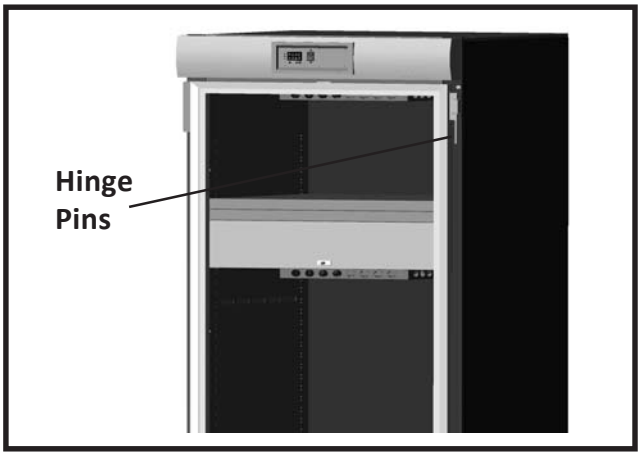
11. Reinstall side panels and top.

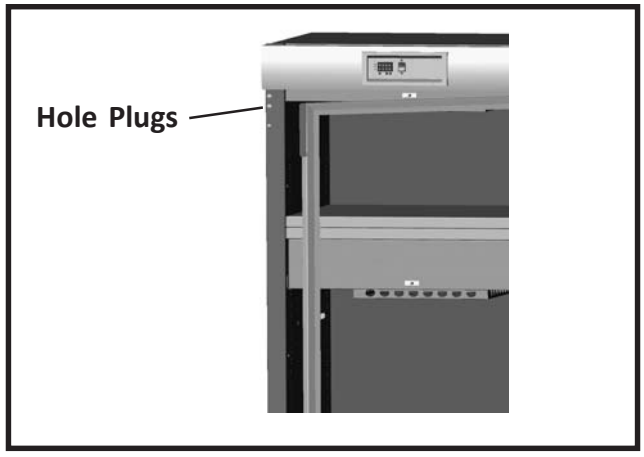
12. The door handles are now in the wrong position. Remove the opposing screws in the side of the door and reinstall.

***For dual steel door cabinets** a LH intermediate hinge, (part no. W0016) is needed to reverse doors. Contact your retailer or service technician for more information.









REPLACEMENT PARTS FOR METAL OR GLASS DOOR WARMING CABINETS

LH Intermediate Hinge.....W0016

(For stainless steel door dual & triple chamber units)

Door Switch.....W0012

Door Switch Cap.....W0141

(For bottom glass doors on dual chamber units only)

Power Switch (OFF/ON).....W0011

Fan Motor (w/ Fan Blade) 120VAC.....W0036

Fan Motor (w/ Fan Blade) 220VAC.....W0106

Thermocouple.....W0037

Overtemp Thermostat.....W0042

Heating Element 120VAC.....W0003 (750 watt)

(For all cabinets except SWC1824 & SWC1518)

Heating Element 120VAC.....W0069 (350 watt) for SWC1824

Heating Element 120VAC.....W0131 (350 watt) for SWC1518

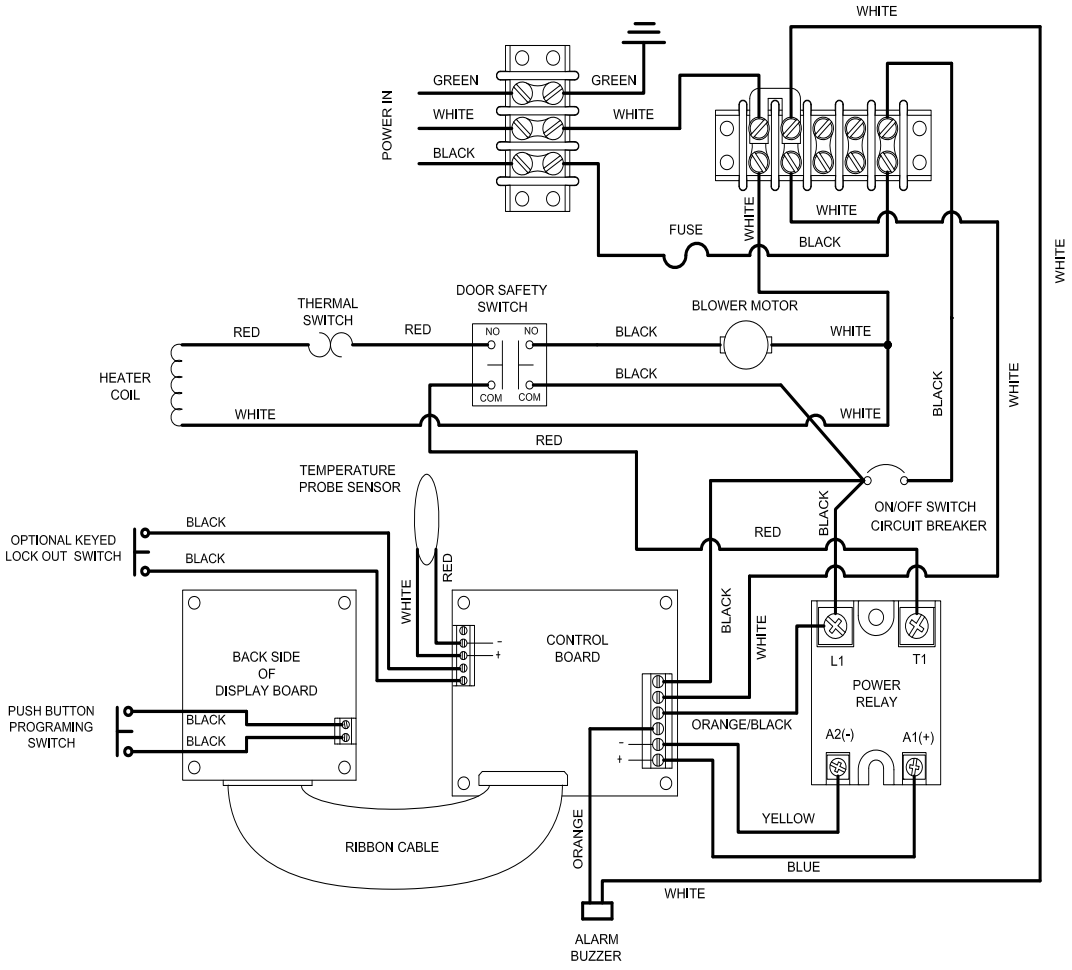
Heating Element 220VAC.....W0107 (750 watt)

(For all cabinets except SWC1824 & SWC1518)

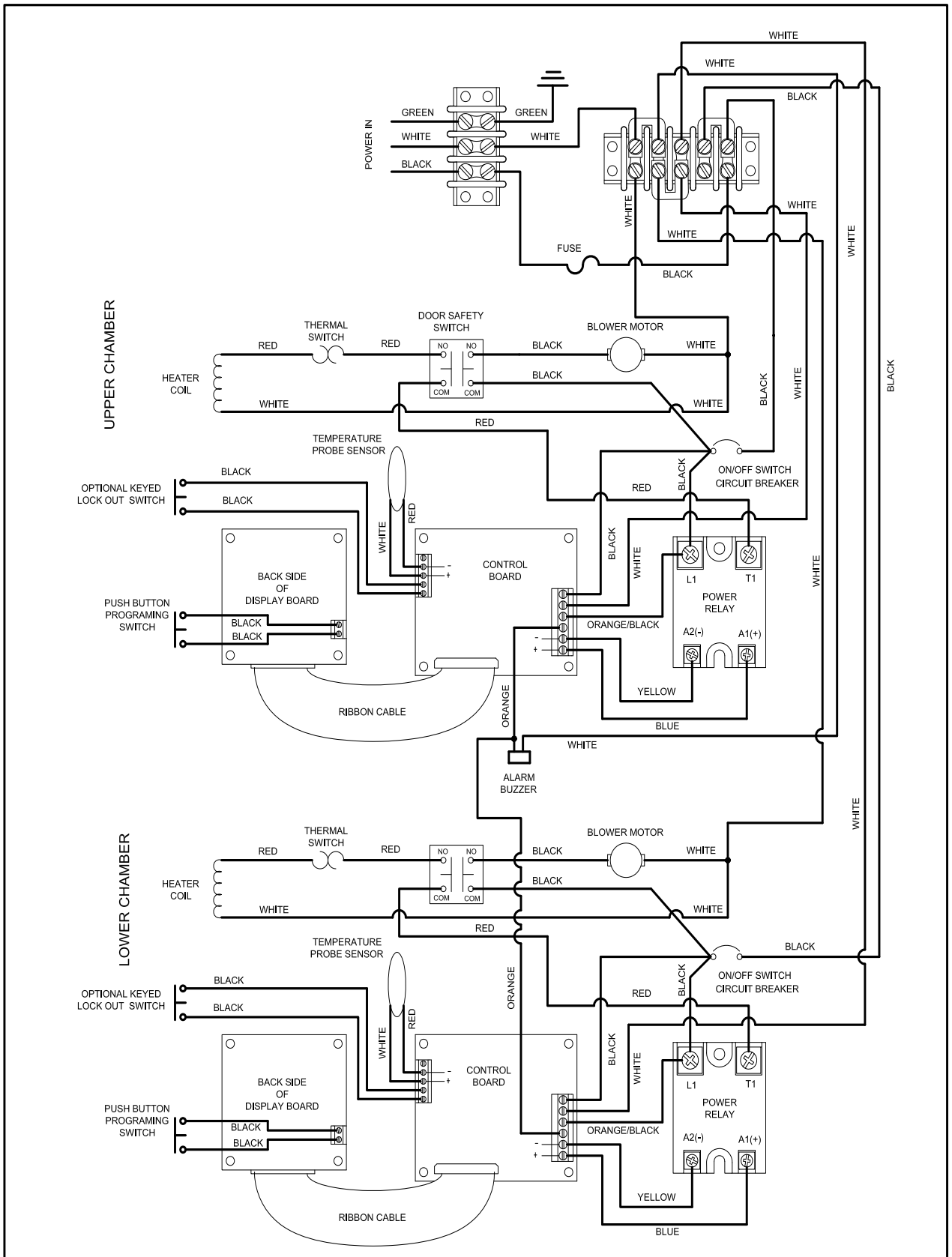
Solid State Relay.....W0083

Old Style Control.....W0001

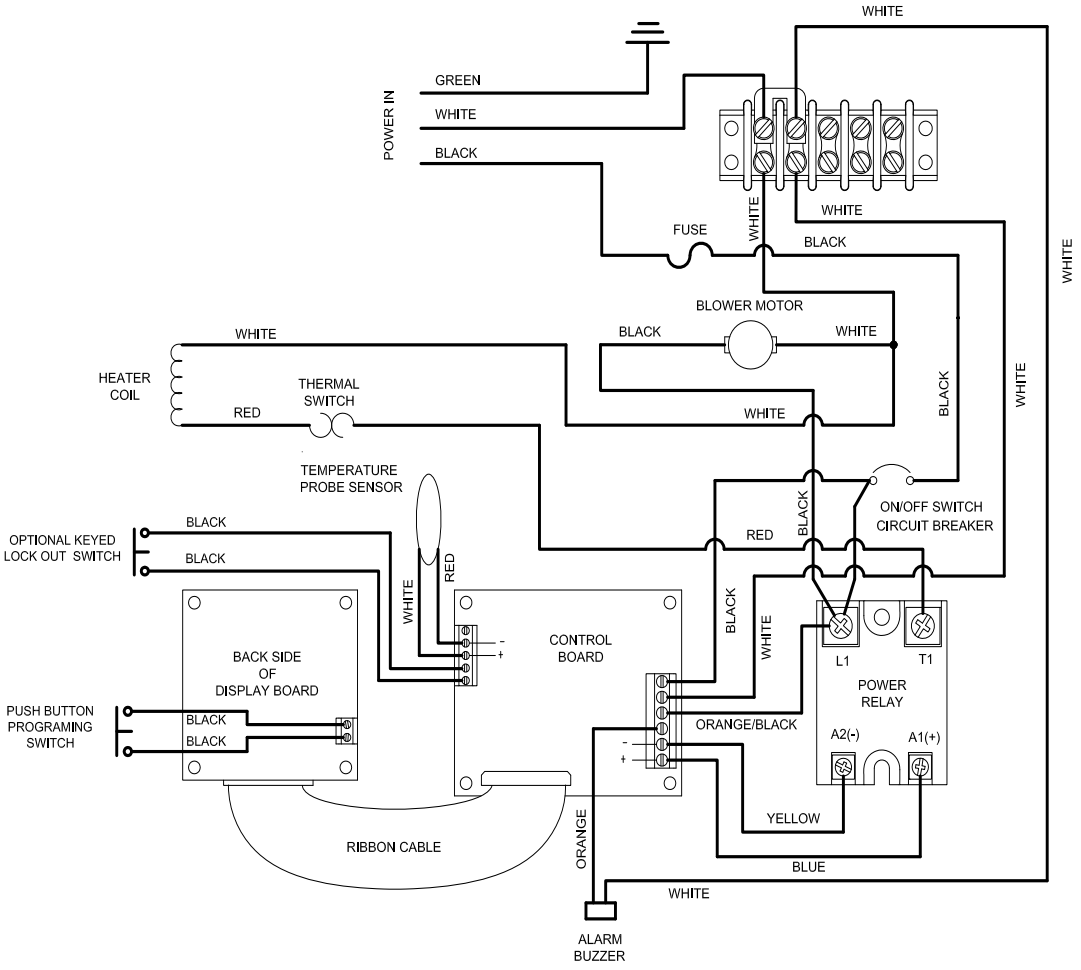
Current Control.....W0084



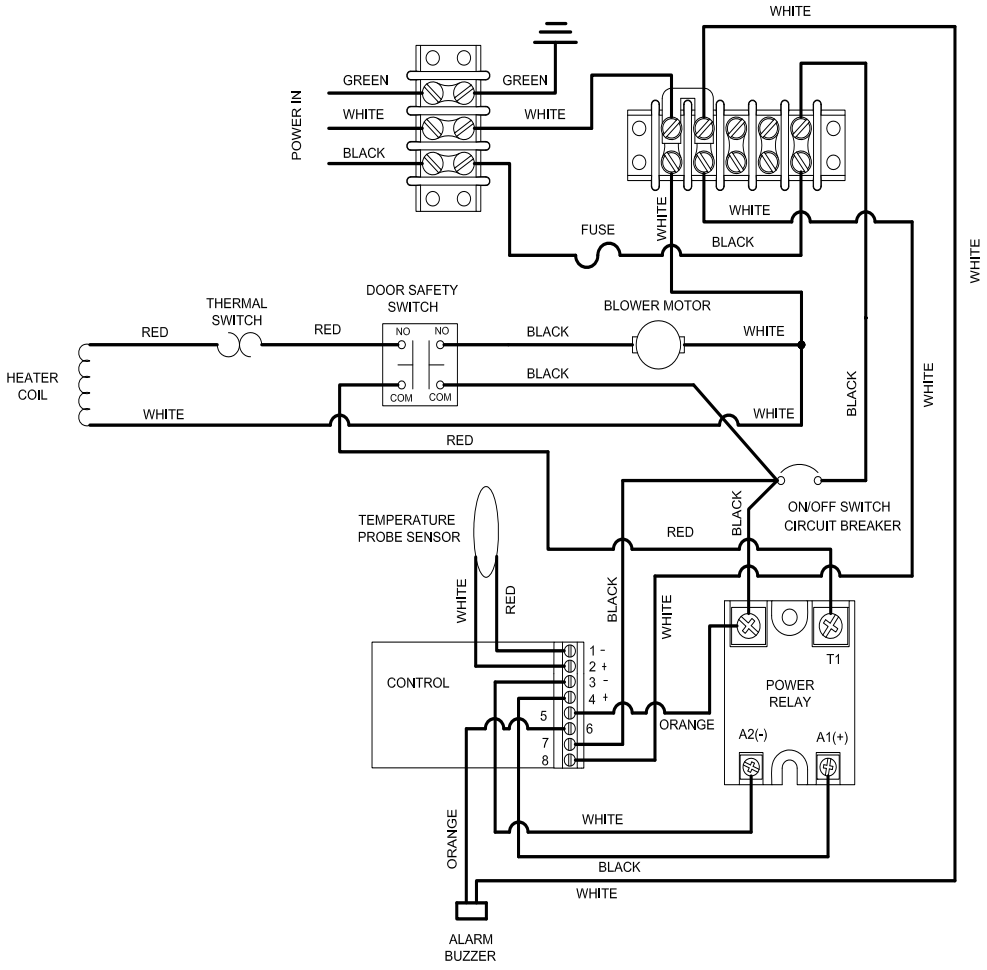
CONNECTIONS FOR SINGLE WARMING CABINETS
EXCEPT SWC1518



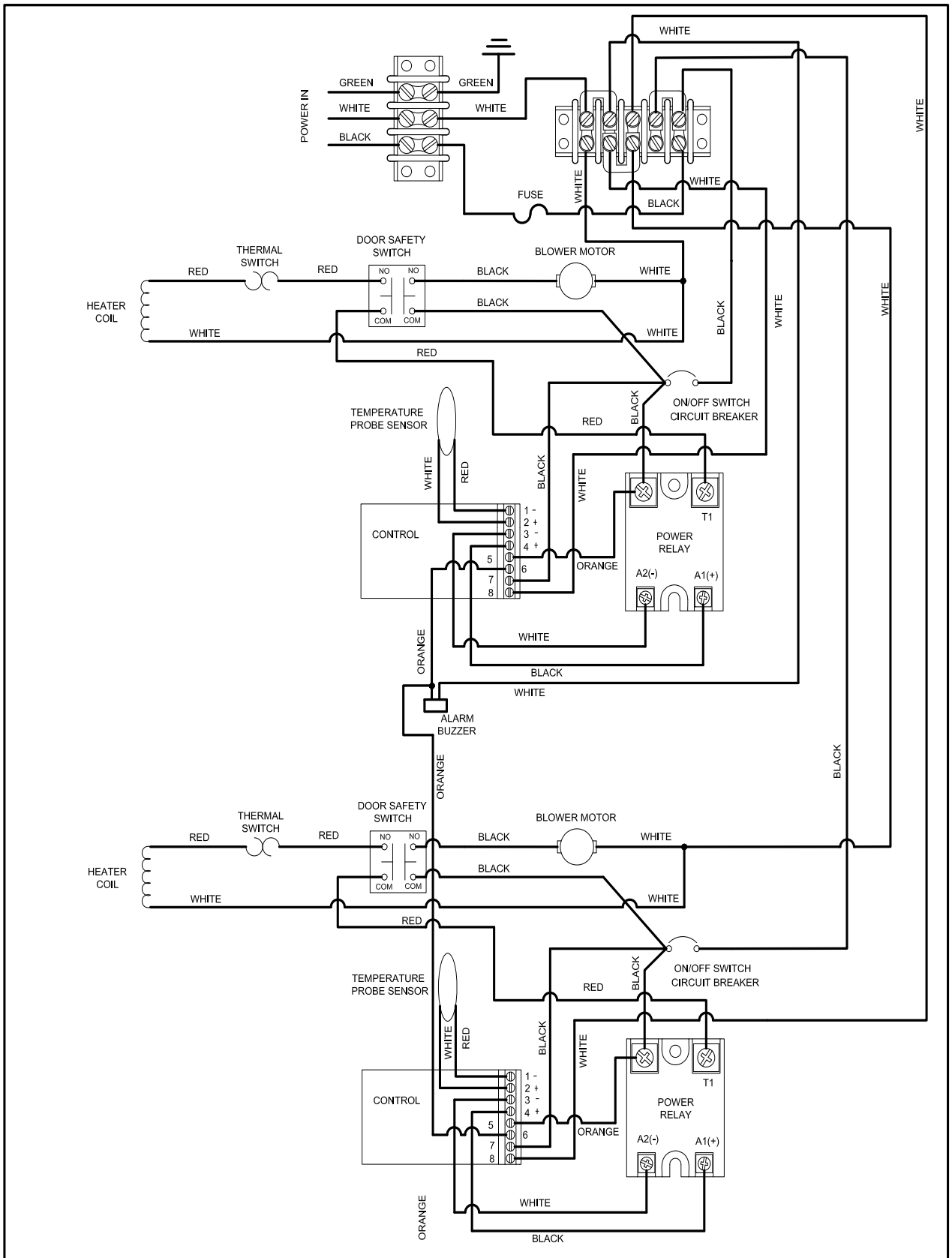
CONNECTIONS FOR DUAL WARMING CABINETS



CONNECTIONS FOR SWC1518 WARMING CABINETS



CONNECTIONS FOR SINGLE WARMING CABINETS
OLD STYLE CONTROL



CONNECTIONS FOR DUAL WARMING CABINETS
OLD STYLE CONTROL

Error Codes

Old Style Control

Current Control

Er 1	Reversed Thermo-couple connection +/-.	**HI** (with Audible)	Cabinet temp is 10 degrees higher than setting.
Er 2	Sensor type mismatchor open RTD.	**LLLL**	Input temperaure is lower than input range.
Er 3	Sensor type mismatch.	**HHHH**	Input temperature is higher than input range.
Er 4	Open thermocouple, bad connection, broken wire.	**OPEn**	Input sensor is not connected.
Er 5	Electrical noise.	**JIC** (Continuously)	Controler failure
Blank Display	Control is inoperable.		

Operating Temperature Lock

(Optional)

On properly equipped cabinets, the chamber temperature can be locked at a desired set point temperature. This can be done by simply setting the desired temperature, inserting the key, and turning it to the lock position. Once the key is in the lock position the temperature cannot be changed. (Be sure to store the key in a safe place.)